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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,324	04/19/2001	Michael Cheiky	968-20-003	2536

7590 02/10/2003
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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 02/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,324

Applicant(s)

CHEIKY ET AL.

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities: at the end of the claim, the comma should be a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a solution containing 1-11 wt% cellulose with respect to solvent (page 4, line 24), does not reasonably provide enablement for a solution containing 1-11 wt% solvent. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with claim 19. The claim is hereinafter interpreted as requiring 1-11 wt% cellulose with respect to the solvent, as disclosed in the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 6, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 651436 in view of Klug (U.S. Patent 3,754,877).

Regarding claims 6 and 9, SU 651436 teaches a silver-zinc alkaline battery in the abstract. Regarding claims 1 and 6, the battery comprises a separator made of crosslinked cellulose.

The reference does not expressly teach that the cross-linkages comprise hydrocarbons containing 4 to 16 carbon atoms, as recited in claims 1 and 6. The reference further does not teach that the cross-linkages are alkylene chains containing 4 to 12 carbon atoms (claims 4 and 7), or that no more than 10% of the available hydroxyl sites on the cellulose are crosslinked (claims 2, 3, and 6).

The patent of Klug is directed to gelled fuel compositions. In column 2, lines 17-43, the reference discloses a hydroxylalkyl cellulose which is cross-linked by olefin groups. The olefin group may comprise a vinyl benzyl group, which would have at least 8 carbon atoms (see col. 2, line 25).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Klug to cross-link the cellulose separator of the SU reference with an olefin group such as vinyl benzene. In column 2, line 31, Klug teaches that "in order to form a sufficiently rigid gel for the purposes of this invention, the olefin-modified hydroxyalkyl cellulose must be

crosslinked.” The artisan, knowing that strength is an important property in a battery separator, would therefore be motivated to cross-link the cellulose separator of the SU reference with an olefin group such as vinyl benzene.

It is recognized that in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); MPEP §2141.01(a). In this case, the Klug reference is believed to be reasonably pertinent to the problem with which the inventor was concerned. Page 4, line 6 of the instant specification states that “this separator has higher mechanical strength than uncrosslinked separators.” As noted above, the Klug reference is concerned with the “rigidity” of the cellulose. Accordingly, the Klug reference is believed to be analogous to the claimed invention.

Regarding the limitation in claims 3 and 6 that or that no more than 10% of the available hydroxyl sites on the cellulose are crosslinked, Klug teaches in column 4, line 30 that “in most cases a crosslinker concentration of about 0.2 to 10 percent based on the weight of the cellulose derivative will be employed.” The crosslinker concentration is proportional to the number of crosslinked hydroxyl sites on the cellulose. Further, it is known that the strength of the final product is dependent on the number of sites used for crosslinking. Accordingly, the artisan would be motivated to adjust the amount of sites used for crosslinking in accordance with the desired strength of the separator. For a small battery with thin components, the desired strength and thus the amount of crosslinking would be relatively low, i.e., less than 10%. It has been held

that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

6. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 651436 in view of Klug as applied to claims 1-4, 6, 7, and 9 above, and further in view of Manganaro et al (U.S. Patent 5,155,144).

The SU reference does not expressly teach that cellulose is “microcrystalline” cellulose, as recited in claims 5 and 8.

The patent of Manganaro et al. is directed to a battery separator comprising a cellulose component, such as microcrystalline cellulose (see col. 18, line 60).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Manganaro et al. indicates that microcrystalline cellulose is a functional equivalent of the cellulose of the SU reference. Thus, it would be obvious to substitute the microcrystalline cellulose of Manganaro et al. into the separator of the SU reference. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213USPQ 532 (CCPA 1982); MPEP §2144.06. Furthermore, the disclosure of Manganaro et al. recognizes that microcrystalline cellulose as suitable for use in a battery separator. The selection of a known material based on its suitability for its intended use has been held to be *prima facie* obvious (MPEP §2144.07).

7. Claims 10, 11, and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 651436 in view of Klug as applied to claims 1-4, 6, 7, and 9 above, and further in view of Turbak et al (U.S. Patent 4,352,770).

Regarding claim 11, the SU reference further teaches that the separator is 10-60 microns thick. Regarding claim 10, the SU reference teaches that the cellulose is regenerated from a solution.

Regarding claims 10 and 15, Klug further teaches that the cross-linking agent may be a vinyl benzyl halide, e.g., a vinyl benzyl iodide. Regarding claims 10, 14, and 20, Klug further teaches that an inorganic base is added to the solution to effect crosslinking (see col. 4, lines 4-26).

However, neither reference expressly teaches that the solution is an organic solution comprising DMAC and a lithium salt (claims 10 and 16-19).

The patent of Turbak et al. is directed to a process for forming a shaped cellulose product. Regarding claims 10 and 17, the process comprises the step of dissolving the cellulose in a solution of dimethylacetamide (DMAC) containing 3-15 wt% lithium chloride. Regarding claim 19, the solution may comprise up to 16% by weight of cellulose (see col. 5, line 7).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Turbak et al. to dissolve the cellulose of the SU reference in a solution comprising DMAC and lithium chloride. In column 1, line 24, Turbak et al. teach that "it is an additional object of this invention to provide a solvent system for cellulose from which high quality

cellulosic products may be produced economically on a commercial basis.” Accordingly, the artisan would be motivated to dissolve the cellulose of the SU reference in a solution comprising DMAC and lithium chloride, thereby rendering the claimed subject matter obvious.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over SU 651436 in view of Klug in view of Turbak et al as applied to claims 10, 11, and 14-20 above, and further in view of Manganaro et al.

The SU reference does not expressly teach that cellulose is “microcrystalline” cellulose, as recited in claim 12.

The patent of Manganaro et al. is directed to a battery separator comprising a cellulose component, such as microcrystalline cellulose (see col. 18, line 60).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Manganaro et al. indicates that microcrystalline cellulose is a functional equivalent of the cellulose of the SU reference. Thus, it would be obvious to substitute the microcrystalline cellulose of Manganaro et al. into the separator of the SU reference. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213USPQ 532 (CCPA 1982); MPEP §2144.06. Furthermore, the disclosure of Manganaro et al. recognizes that microcrystalline cellulose as suitable for use in a battery separator. The selection of a known material based on its suitability for its intended use has been held to be *prima facie* obvious (MPEP §2144.07).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over SU 651436 in view of Klug in view of Turbak et al in view of Manganaro et al. as applied to claim 12 above, and further in view of Askew et al (U.S. Patent 6,258,488).

The SU reference does not expressly teach that the cellulose has a degree of polymerization from 200 to 1200, as recited in claim 13.

However, the cellulose of the SU reference would be likely to have a degree of polymerization within this range, as evidenced by the disclosure of Askew et al. In column 1, line 67 et seq., Askew et al. teach that the degree of polymerization of a cellulose battery separator is "preferably from 200 to 5000, and more preferably from 400 to 1000, and typically around 800." Thus, the disclosure of Askew et al. indicates that a degree of polymerization within a range of 200 to 1200 is conventional in a cellulose battery separator, and therefore could be expected to be present in the separator of the SU reference. Accordingly, this limitation is not considered to distinguish over the references.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-9 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 12, 13, 24, and 25 of copending Application No. 09/839,276 (U.S. Pre-Grant Publication No. 2002/0182510).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '276 application anticipate instant claims 1 and 5. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993). Furthermore, the recitation in instant claims 3 and 6 that no more than 10% of the available hydroxyl sites are crosslinked is considered to be obvious to a skilled artisan. As stated in section 5 above, the artisan would be motivated to optimize this parameter according to the desired strength of the final separator.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 10-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of copending Application No. 09/839,276 (U.S. Pre-Grant Publication No. 2002/0182510) in view of Klug and Turbak et al. The claims of the '276 application do not expressly disclose the deprotonizing step with inorganic base (instant claims 10 and 20), the addition of an iodide (claims 10 and 15), or the use of a DMAC/lithium chloride solution (claims 10 and 16-19). However, the use of these

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steps is considered to be obvious for the reasons stated in sections 5 and 7 above. Accordingly, instant claims 10-20 are considered to define an obvious variation of the process recited in the '276 application claims.

This is a provisional obviousness-type double patenting rejection.

Conclusion

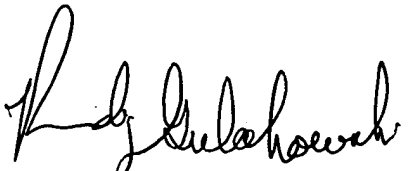
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

February 5, 2003


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